



AN APPLICATION TO TRACK A VEHICLE & ANALYZE UNSAFE DRIVING BEHAVIOUR

* Sandip S. Salunkhe¹ | Moin J. Shikalgar¹ | Ketan A. Raut¹

¹ Department of Computer Engineering, TSSM's BCOER, Pune, India - 411041.

ABSTRACT

Numerous vehicles drivers know about the driving practices and propensities that can prompt wasteful and perilous driving. In any case, it is frequently the case that these same drivers unconsciously display these wasteful and dangerous driving practices in their regular driving action. This paper proposes a commonsense and temperate approach to catch, measure, and ready drives of wasteful and perilous driving. The proposed arrangement comprises of a portable application, running on a current cell phone gadget, combined with a perfect OBD-II (On-board diagnostics II) per user.

KEYWORDS: Continuous Systems, Road Vehicles, Mobile Applications, Mobile Devices, Smartphone, OBD II.

Introduction

There are a few estimations, which can be utilized alone or as a part of mix, that can show if a driver is driving perilous or wastefully. A little subset of these estimations incorporates:

- Deceleration
- Vehicle Speed
- Detection of faults in Safety or Mechanical Equipments Environment Conditions (Eg. Traffic, Temperature) Rate of Fuel Consumption
- Engine RPM

In spite of the fact that these estimations can decide the wellbeing and productivity of driving movement, there has not been a down to earth approach to catch and show these information to the ordinary driver in a way that can affect the driver's conduct continuously or in a way in which it could be inspected and considered in a verifiable sense.

A. Capturing Safety and Efficiency Measurements

In the past catching these estimations has been unfeasible for the normal driver. These sorts of estimations must be caught in a controlled domain or through the utilization of costly and particular gear. Current cell phones, as cell phones, now have large portions of the general elements required by this specific hardware. These components incorporate a client interface to acknowledge enter and show yield, figuring energy to run ongoing counts, the capacity to run particular applications, and the capacity to store and recover information both locally and remotely (e.g. Web and GPS). Conveying these components to a cell phone has decoupled huge numbers of the elements that made these specific gadgets costly or unfeasible for the regular driver. It is assessed that 23% of versatile customers now have a cell phone [1]. Since a hefty portion of these versatile stage makers (i.e. Apple, Google, and so on.) have opened up their gadgets to acknowledge outsider equipment and programming. The force of these cell phones can now be matched with less costly concentrated gear that does not need to reproduce or incorporate the components that are accessible on the cell phone. At the point when the components of a cutting edge cell phone are combined with a cheap OBD-II per user, the cell phone turns into a capable device that can specifically correspond with the vehicle's Engine Control Unit (ECU). Doing as such permits the cell phone to catch, decipher, and show ongoing information that points of interest the flow condition of the vehicle, and in addition measures the driver's collaborations with the vehicle. An OBD-II per user is a gadget utilized for investigating issues with a vehicle or recover continuous execution information by interfacing straightforwardly to a vehicle's ECU. In 1996 a law was passed that made it required for all vehicles sold in the United States to bolster the OBD-II detail.

B. Recent Use of this Technology

As of late, in the versatile application advertise, a few applications have risen that match the force of a cell phone with the data accessible through the utilization of an OBD-II per user. These applications have a tendency to be coordinated toward auto fans, creating highlights that focus on measuring vehicle execution and investigate mechanical issues [2]. Different applications are surfacing that emphasis on ecological concerns [3]. These applications focus on elements such as measuring a driver's carbon foot shaped impression and fuel utilization. Some of these applications incorporate elements that can recognize security issue (e.g. issues with the vehicle's security control framework). Then again, these compo-

nents are centered around recognizing mechanical issues with wellbeing gear, not on distinguishing constant worries with the driver's conduct or environment.

C. Mobile Application Concept

This paper strolls through the improvement procedure of a portable application that is essential target is to catch, measure, and caution clients of dangerous and wasteful driving. "How's The Ride?" is a product application that will screen, record, and show ongoing vehicle information to the driver of a car. The application will give continuous criticism empowering the driver to alter his or her driving style to be more secure, smoother, and more productive. The application is a model. The final item, as not yet completely created, will require heartier testing and include tuning before it can be viewed as an attractive application. Rather, the model displayed in this paper ought to be dealt with as a proof of idea figuring out whether a cell phone can be sufficiently hearty to catch, measure, and ready drivers of dangerous and wasteful driving conduct. What's more the gear must be commonsense in cost and usability.

Materials and Methods:

In spite of the fact that this application is a model, the application will have some broad, yet strict, utilitarian and nonfunctional prerequisites.

A. Functional and Non-Functional Requirements

1) Real Time View Safety and Efficiency Measurements

The application must give at least three of the accompanying estimations to track security and effectiveness recorded in Table I.

TABLE I: POTENTIAL SAFETY AND EFFICIENCY MEASUREMENTS

Measurement	Description
Acceleration	Positive change in velocity over time. Accelerating too quickly can be considered inefficient and unsafe.
Deceleration	Negative change in velocity over time. Decelerating too quickly can be considered inefficient and unsafe.
Speed of Vehicle	Measured in MPH. Distance divided by time. Driving too fast can be considered inefficient.
Detection of Safety Equipment Issues	Determining faults in the vehicle's safety equipment. Driving with faulty safety equipment is dangerous.
Detection of Mechanical Issues	Determining equipment. Mechanical faults can impact safety and efficiency.
MPG	Miles Per Gallon. Driving style can have a positive or negative impact on the rate that a vehicle uses fuel.
Location	Geographic location. Can be used in conjunction with other data to pinpoint location of inefficient or unsafe driving.
Weather & Traffic Conditions	Current conditions of the weather or traffic. When paired with location, this measurement can be used as a variable in determining unsafe driving.
Engine RPM	Revolutions per minute. Can be used to detect inefficiency such as revving or over- taxing an engine.

These estimations ought to be shown to the client progressively cautioning the client of dangerous and wasteful conduct.

2) Logging of Data

At the point when an issue is recognized, the application will log a compressed rendition of the issue on a five second interim. The five second interim is required in light of the fact that continuously mode, these estimations might be gathered and showed on an a great deal more successive premise. This interim permits the information to be compressed in a more significant manner.

3) Reflective view

The application will give an intelligent perspective that shows perilous, wasteful, or sketchy driving conduct from the outlined information gathered in prerequisite #2.

This perspective must show the information meaningfully that permits the client to consider what patterns or natural variables might have set off the undesired conduct (e.g. converging on to a roadway). In particular, this perspective ought to be accessible in the verifiable sense, not requiring any connection while driving.

4) Platform

The application will keep running on a cutting edge cell phone gadget.

5) Performance (Progressive Mode)

Progressively mode, vehicle estimations showed to the client must be upgraded at least once every second.

6) Performance (Continuous Mode)

Continuously mode, record-breaking basic estimations subject to outsider gadgets (e.g. system correspondence) must endeavor to upgrade once consistently.

7) Usability

Ceaselessly mode, record-breaking essential estimations subject to outcast devices (e.g. framework correspondence) must try to redesign once reliably.

8) Performance

At the point when the application is checking the driver progressively mode, the application ought not to require direct communication with the touch screen.

System Design:

A. System Architecture

At the point when the application is observing the driver progressively. The framework building design comprises of an OBD gadget, An advanced mobile phone having android stage, an android application, a server and related database. The OBD per user gadget get to the motor insights and execution estimations utilizing its inbuilt sensors and vehicle sensors. This gadget has Bluetooth availability through which it is associated with the advanced mobile phone. The android application gets the measurements from the OBD and sends it to the server by means of web. The server sends a ready message to the proprietor on getting the statistics.ode, the application ought not require direct association with the touch screen.

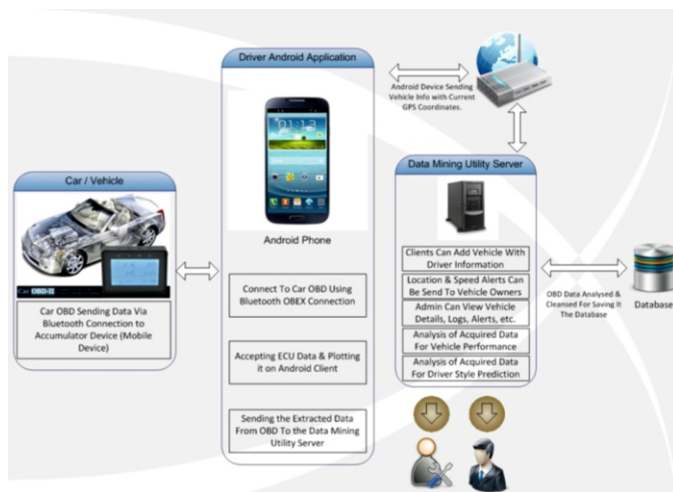


FIGURE 1: SYSTEM ARCHITECTURE

B. Hardware Selection

1) Selecting a Smartphone Device

Today there are four dominant Smartphone devices on the market. For this application, the Android OS has been targeted.

Although many of the other Smartphone devices offer several of the same features as the Android, the number of applications available, the consistency of hardware between different versions of the device and the potential to run the application on non-phone mobile devices (e.g. Android Tabs, Android TV etc.) make the Android OS the most attractive.

2) Selection of Relevant OBD Reader

The OBD-II reader supports three main types of connectivity's,

- Bluetooth Connectivity
- Wi-Fi Connectivity
- Direct Connectivity

Among all three types, the direct connectivity requires a wired connection which rises complexity of connection & its very less efficient. Secondly the Wi-Fi connectivity although being efficient enough, it is very costly to setup a Wi-Fi connection for this system. Here the target connectivity used is the Bluetooth connection as it is very common and cheaper option providing greater efficiency in terms of cost, performance, setup and outputs etc.

C. Interface

1) Settings View: Here the limits of the estimations that ready clients of hazardous or wasteful driving can be balanced. This figure demonstrates the Setting View. This perspective is important in light of the fact that every vehicle is distinctive. In spite of the fact that default settings are given, this perspective gives a client the capacity to begin with less strict settings and diminishes the limit as their driving makes strides

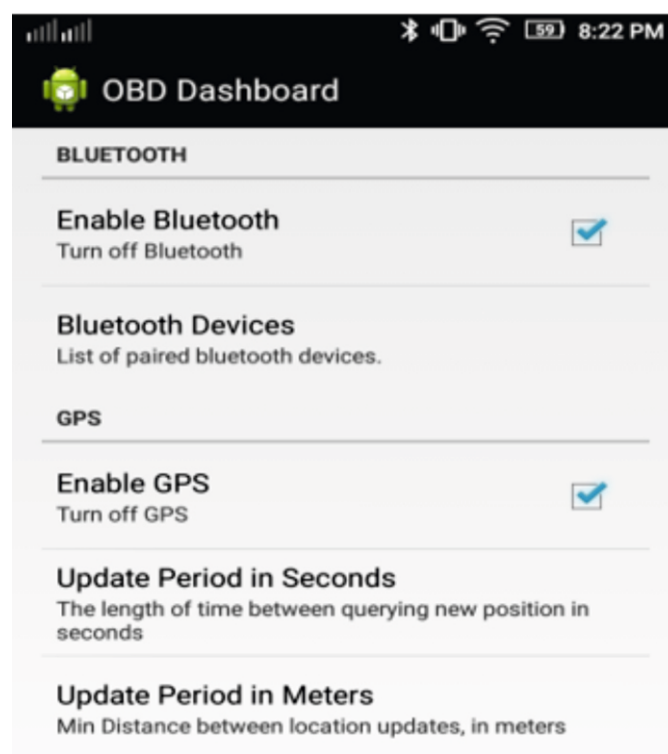


FIGURE 2: SETTINGS VIEW

2) Real-Time View: This screen demonstrates the Real-Time View. This is the primary view that will be shown when a client is driving. This perspective requires no client communication, as this would occupy the driver. Continuous information is caught and showed to the client while this perspective is dynamic. The three gages at the highest point of the perspective showcase RPM, MPH and Acceleration in FPS2. At the point when one of these three estimations is met or surpassed, the perusing for that estimation turns from yellow to red, and an alarm is logged. A pin, speaking to the alarm, is then dropped on the guide to speak to the area where the occasion happened. Normal MPG and Instant MPG will likewise turn red if the vehicle comes to or surpasses the set limit. On the other hand, these measures won't log alarms, as they are not firmly connected to area. Additionally, the change of moment MPG is excessively visit for a condensed perspective of this data to be important. Two different estimations are incorporated into this perspective. These estimations are included in light of the fact that they are a piece of the MPG count. These estimations are Gallons Used and Miles Driven. In spite of the fact that they may not specifically identify with measuring proficiency, they give worth to the individuals who are following their fuel mileage. These two estimations are spared when the application is shutdown and restarted. This keeps up the Average MPG estimation after some time.

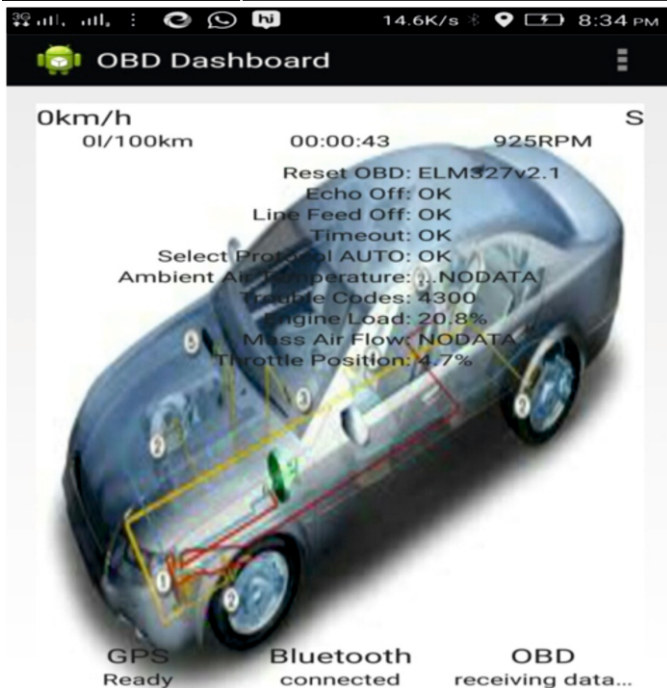


FIGURE 3: REAL VIEW

Conclusions:

This paper presented some sort of structure and a prototypical process pertaining to real-time vehicle keeping track of along with traveling guidance. Data produced by using OBD-II, via mobile phone micro-devices along with Net products and services is utilized to help annotate this framework pertaining to additional semantic-based inferences. Upcoming function incorporates other improvements towards the portable prototype, at the grams, speech notifications along with, in terms of research can be involved, additional OBD variables along with mobile phone peripherals (at the grams, digicam, microphone) could possibly double along with real names built into reference point logic different languages.

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